


 Industry
Canada
 Industry
Canada

Canada

 Français
Home

 Contact Us
Site Map

 Help
What's New

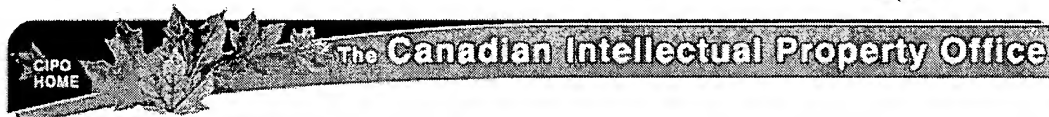
 Search
About Us

 Canada Site
Registration

Strategis Index:

 A B C D E F G H I J K L M N O P Q R S T
 U V W X Y Z

strategis.gc.ca

 CIPO  OPIC
**Canadian Patents Database**

03/01/2002 - 10:57:10

(12) **Patent Application:**(11) **CA 2092730**
 (54) METHOD OF PRODUCING THREE-DIMENSIONALLY
 SURFACE-STRUCTURED LININGS FOR WALL AND FLOOR
 SURFACES AND STRUCTURE PASTE THEREFOR

 (54) METHODE DE FABRICATION DE REVETEMENTS MURAUX
 ET DE SOL A RENFORT TRIDIMENSIONNEL DE SURFACE ET
 PATE ASSOCIEE
View or Download Images

- (72) Inventors (Country): **Petridis, Dimitrios** (Germany
(Federal Republic of))
- (73) Owners (Country): **Marburger Tapentefabrik J.B.
Schaefer GmbH & Co.
KG** (Germany (Federal Republic of))
- (71) Applicants (Country):
- (74) Agent: **Oyen Wiggs Green & Mutala**
- (45) Issued on:
- (22) Filed on: **Mar. 26, 1993**
- (43) Laid open on: **Oct. 3, 1993**
- (51) International Class (IPC): **C09D 131/04; C08L 31/04**

Patent Cooperation Treaty (PCT): **No**(30) Application priority data:

Application No.	Country	Date
P 42 10 922.1-43	Germany (Federal Republic of)	Apr. 2, 1992
92 121 757.6	EPO	Dec. 22, 1992

Availability of licence: **N/A**Language of filing: **English****ABSTRACT:****Abstract**

A method is described for producing structured wallpapers in which a

PVC-free and plasticizer-free structure paste on
The basis or inorganic and/or organic fillers and a polymer dispersion of a vinyl acetate copolymer is used. Noncrystallizing sorbite syrup or ethylene glycol as processing retarding agents, paraffin dispersion as hydrophobing agent and micropearls and/or hollow microbeads for increasing the specific volume may also be added to the structure composition.

CLAIMS: [Show all claims](#)

*** Note: Data on abstracts and claims is shown in the official language in which it was submitted.

View or Download Images :

- ☒ Cover Page Image
- ☐ Abstract Image
- ☐ Claims Image
- ☐ Disclosures Image
- ☐ Drawings Image

[View the Image](#)

[Download in Adobe PDF](#)

[Top of Page](#)

Last Modified:
2001/06/13

[Important notices and
disclaimers](#)
[Privacy Statement](#)



Conservation des
Affaires universitaires Canada
Bureau des brevets
Ottawa, Canada
K1A 0C9

Conservation and
Corporate Affairs Canada
Patent Office

(21) (A1) 2,092,730
(22) 1993/03/26
(43) 1993/10/03

5,025,6/01

(51) INTL. CL. ^b C08L-031/04; C09D-131/04

(19) (CA) APPLICATION FOR CANADIAN PATENT (12)

(54) Method of Producing Three-Dimensionally
Surface-Structured Linings for Wall and Floor Surfaces
and Structure Paste Therefor

(72) Petridis, Dimitrios - Germany (Federal Republic of) ;

(71) Warburger Tapetenfabrik J.H. Schaefer GmbH & Co. KG -
Germany (Federal Republic of) ;

(30) (DE) P 42 10 922.1-43 1992/04/02
(EP) 92 121 757.6 1992/12/22

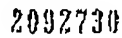
(57) 28 Claims

Notice: This application is as filed and may therefore contain an
incomplete specification.

Canada

CHANGING TO NEW DESIGN





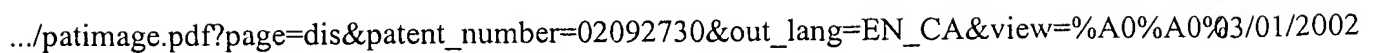
Method of producing three-dimensionally surface-structured
linings for wall and floor surfaces and structure paste
therefor

15

20

35

35





2092730

1 a good resistance to light, are highly resistant to
 washing, scratch-resistant, and even in the solidified
 state remain adequately soft and flexible, can be worked to
 5 relatively lightweight structures by employing blowing
 agents, are resistant to wear and also flame-resistant.
 The PVC plastisols however also have some disadvantages.
 Thus, for the gelation and foaming they require relatively
 10 high processing temperatures in the range of 180°C to 230°C
 and furthermore they reduce the breathing activity of the
 walls and are sensitive to nicotine (discolouring).
 However, the greatest disadvantage of PVC plastisols is
 their chemical origin because they are chlorinated
 15 compounds which can lead to environmental problems. The
 polyvinyl chlorides are essentially rot proof and
 consequently can generally only be disposed of by burning.
 When this is done they give off harmful hydrochloric acid
 vapours, which by the way also occurs in the case of fire,
 and can become a considerable hazard to humans.
 20 Furthermore PVC plastisols fundamentally contain
 plasticizers, substantially phthalates, which are partially
 liberated during processing and require expensive
 collection and combustion apparatuses.

25 The invention is based on the problem of providing a method
 of producing three-dimensionally surface-structured linings
 or coverings for wall, ceiling and floor surfaces in which
 structuring pastes are used which are essentially free from
 PVC and plasticizers, can be worked by the hitherto usual
 30 application methods without any problems and lead to high
 product quality. The objective of the invention is also to
 make available a particular substantially PVC-free and
 plasticizer-free structure paste for producing surface
 35 structured linings.





2092730

1

3

As regards the method, this problem is solved according to the invention fundamentally by the characterizing features of claim 1. A suitable structure paste is characterized fundamentally by claim 3.

5

10

15

For simplicity, hereinafter the invention will be described only in its application to the production of structured wallpapers: it will be clear to the person skilled in the art that the production method described can be applied likewise to other structured articles and thus in particular is suitable also for producing other wall and floor coverings and linings. Also, the substrate is in no way restricted to the raw wallpaper usually employed when making structured wallpaper. The substrate may consist of a great variety of materials, in particular raw wallpapers produced in suitable manner may also be employed for producing structured wallpapers.

20

25

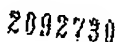
30

It has been found in extensive tests that high-quality structured surfaces can be obtained using structure pastes based on polymer dispersions of vinyl acetate copolymers and containing suitable fillers and pigments in an aqueous system. The aqueous system has the advantage that the structure paste can be solidified by simple drying or evaporation and no harmful vapours are formed. The drying may take place at temperatures between 40 and 200°C and this is another advantage compared with the use of PVC plastisols.

35

The structure paste according to the invention may also be worked using the application methods mentioned at the beginning hitherto usual for PVC plastisols. A further surface finishing of the solidified structures, for example by imprinting, painting, flocculation or the like, is readily possible.

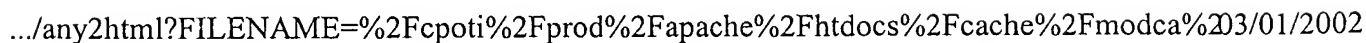




4

As organic filler for the structure paste, principally ungelatinized starch can be used, preferably potato starch. The ungelatinized or non-agglutinated starch has a good filling power without the structure composition becoming heavier because the starch is lighter than the inorganic fillers. Furthermore, it is biologically easily and completely decomposable and this has a positive effect on the decomposability of the structure paste. Since the ungelatinized starch forms a unit with the inorganic fillers, irrespective of whether the inorganic fillers are calcium carbonates or aluminum hydroxides, it can be regarded as a partial substitute for inorganic fillers.

35





2092730

Moreover, the ungelatinized starch is insoluble in cold water and begins to dissolve only with rising temperature. This property has production technical advantages. The drying temperature and the drying duration can be chosen so that the starch particles at their surface are slightly initially dissolved by the temperature and the moisture of the mixture and combine with each other and with the other fillers to form a unit. This gives a better strength of the structure composition.

In addition, the starch binds a considerable proportion of the water and liberates the latter slowly during drying. This prevents rapid evaporation, which could lead to formation of bubbles.

When using starch the total fillers contain expediently at least 10 % by weight, preferably however 25 - 40 % by weight, ungelatinized starch as organic filler. The ungelatinized starch is present in powder form, preferably with a grain size of 10 - 100 µm.

Possible inorganic fillers for the structure composition are primarily aluminium hydroxide ($Al(OH)_3$) and calcium carbonate ($CaCO_3$). However, a certain addition of titanium dioxide (TiO_2) may also be advantageous as additional white pigment. The amount of titanium dioxide used may be up to 10 % by weight of the total inorganic and/or organic fillers.

The aluminium hydroxide as filler is preferably used with a grain size of 20 - 25 µm. The calcium carbonate preferably has a grain size distribution of 5 - 30 µm and an oil number of 15. In the case of titanium dioxide, preferably the rutile modification is employed. Deviations from the filler specifications above are however possible.





2092730

1

5 It has further been found extremely advantageous to add to the system a certain amount of an organic processing retarder. It has been found that the addition of 1 - 8 % by weight non-crystallizing sorbite syrup, with respect to the total paste, is very advantageous for the working thereof because in addition to the working retardation the viscosity of the structure paste is also positively influenced.

15 The non-crystallizing sorbite syrup may possibly be replaced by ethylene glycol or other organic solvents with corresponding properties. Thus, it has been found that the addition of 1 - 5 % by weight ethylene glycol, with respect to the total paste, is also advantageous for the working thereof in certain cases.

20 It may also be advantageous to add hydrophobing agents to the structure paste to impart to the structured wallpaper to be made a water-repellent character to a certain extent. It has been found that this can also be achieved by addition of 1 - 3 % by weight paraffin dispersion with respect to the total paste.

25 To reduce the specific weight of the dried structure paste and to intensify the structure formation thereof during drying as well, appropriate additives may be added to the structure paste in relatively small amounts by weight.

30 To enable the specific volume of the structure paste to be increased during the processing, in particular during the drying, it has been found advantageous to add to the total paste about 1 - 8 % by weight of so called micropearls. Micropearls are microcapsules which are filled with a blowing agent and have a diameter of about 10 - 20 µm.





2092730

7

constituting of thermoplastic plastic, and at 120 - 140°C they expand to several times their volume. These micropearls have for example polymer shells on the basis of methylmethacrylate or also an acrylonitrile copolymer. Preferably, forms are used which have an expansion ratio of about 20. In the structure paste according to the invention these micropearls partially perform the function of the blowing agent in the conventional PVC plastisols.

Moreover, to reduce the specific weight of the fillers or increase the specific volume of the dried paste, a proportion of about 1 - 5 % by weight so-called hollow microbeads may be added to the total paste. These are expanded hollow polymer beads, in the surface of which inorganic fillers are advantageously embedded. The diameter of such hollow microbeads is preferably in the range of 10 - 80 µm and their specific volume is about 0.15 g/cm³. Due to the polymer material of the microbead walls and the inorganic filler particles attached thereto, the hollow microbeads are practically a mixed organic-inorganic filler of very high specific volume. The person skilled in the art is familiar with the viscosity which a structure paste must approximately have to permit working in a specific application method. This viscosity can be regulated with the paste according to the invention by appropriate addition of water.

Of course, colour pigments or dyes may for example also be added to the structure paste according to the invention to influence the outer appearance thereof. It may also be necessary for the working to add to the composition small amounts of biocides or a defoamer, should this prove necessary. The person skilled in the art is familiar with such additives.





2092730

1

Two preferred composition types of the structure paste according to the invention are as follows, in parts by weight:

6

240-360 p.b.w. of a 50-55 % plasticizer-free EVA dispersion
 5- 50 p.b.w. non-crystallizing sorbite syrup
 10- 50 p.b.w. micropearls
 300 p.b.w. $Al(OH)_3$ and ungelatinized starch
 5- 35 p.b.w. water as viscosity adjusting agent.

10

or:

240-360 p.b.w. of a 50-55 % plasticizer-free EVA dispersion
 6- 30 p.b.w. ethylene glycol
 6- 10 p.b.w. micropearls
 230 p.b.w. $Al(OH)_3$ and/or $CaCO_3$
 6- 30 p.b.w. hollow microbends
 25- 30 p.b.w. water as viscosity adjusting agent.

15

20

Up to 30 % by weight titanium dioxide of the rutile type may also be added to these compositions. In addition, the compositions, as mentioned above, may also be supplemented by colour pigments, dyes, defoamers, biocides and similar additives to be used in small amounts.

25

30

A structure paste of the compositions set forth above meets all the demands made on it. It has a good resistance to light, is highly washproof, scratch-proof, hardwearing, remains soft and flexible, and in addition can be made with relatively light weight. In addition, it is hardly inflammable, this being due to the relatively high content of aluminium hydroxide. Compared with the conventional PVC plastisol structures it has the additional advantages that it is free from PVC and plasticizer, has a good water vapour permeability and is insensitive to nicotine, and on

35





2092730

1

combustion does not give off any chlorine-containing compounds, in particular no hydrochloric acid vapours. Furthermore, it does not contain any solutions which are troublesome during working or would have to be collected and may be solidified at relatively low temperatures, leading on the whole to a saving in energy during working. Finally, the structure paste according to the invention is also easily biologically decomposable.

10

Examples of Embodiment

Example 1:

15

A structure paste was mixed together from the starting materials in the amounts given below:

280 p.b.w.	of a 50-55 % plasticizer-free EVA dispersion
200 p.b.w.	Al(OH) ₃ having a
20	grain size distribution of 20-25 µm
100 p.b.w.	of an ungelatinized starch
20 p.b.w.	TiO ₂ of rutile type
37.5 p.b.w.	micropearls
45 p.b.w.	of a non-crystalline sorbite syrup
25	20 p.b.w.
	paraffin dispersion and
	10 p.b.w.
	water as viscosity adjusting agent.

The EVA dispersion, the non-crystallizing sorbite syrup and the water were placed in an agitating vessel and slowly agitated. During the agitation the ungelatinized starch, the micropearls, the aluminium hydroxide, the titanium dioxide and the paraffin dispersion were slowly added in succession. After about 30 min. agitating time the paste was ready to use.

36





2092730

10

On a polymer non-woven fabric as substrate, having a weight per unit area of 50 g/m² and a width of 110 cm, a wallpaper structure was applied with the paste in the screen printing method at a rate of 40 m/min. This structure was dried at about 150°C for 35 sec. The structured wallpaper thus produced met all the demands made on it.

Example 2:

A structure paste was mixed together from the starting materials in the amounts given below:

120 p.b.w.	of a 50/55 % plasticizer-free EVA dispersion
200 p.b.w.	Al(OH) ₃ having a
	grain size distribution of 20-25 µm
100 p.b.w.	of an ungelatinized starch
15 p.b.w.	micropearls
10 p.b.w.	of a non-crystalline sorbite syrup
20 7.5 p.b.w.	paraffin dispersion and
25 p.b.w.	water as viscosity adjusting agent.

The EVA dispersion, the non-crystallizing sorbite syrup and the water were placed in an agitating vessel and slowly agitated. During the agitation, the ungelatinized starch, the micropearls, the aluminium hydroxide and the paraffin dispersion were slowly added in succession. After about 30 min. agitating time the paste was ready to use.

On a polymer non woven fabric as substrate, having a weight per unit area of 50 g/m² and a width of 110 cm, a wallpaper structure was applied with the paste in the gravure method at a rate of 40 m/min. This structure was dried at about 150°C for 35 sec. The structured wallpaper thus produced met all the demands made on it.





2092730

1

11

Example 3:

5

A structure paste was mixed together from the starting materials in the amounts given below:

- 300 p.b.w. of a 50/50 % plasticizer-free EVA dispersion
 30 p.b.w. water
 10 p.b.w. ethylene glycol
 20 7 p.b.w. micropearls having a grain diameter of 10 - 20 μm and an expansion ratio of 20
 130 p.b.w. $\text{Al}(\text{OH})_3$ having a grain size distribution of 20-25 μm
 15 100 p.b.w. CaCO_3 having a grain size distribution of 5-30 μm
 7.5 p.b.w. TiO_2 of rutile type
 12 p.b.w. hollow microbeads having a diameter of 10-50 μm .

20

The EVA dispersion, the ethylene glycol and water were placed in an agitating vessel and slowly agitated. During the agitation the micropearls, the aluminium hydroxide, the calcium carbonate, the titanium dioxide and the hollow microbeads were slowly added in succession. After about 30 min. agitating time the paste was ready to use.

25

30

On a polymer non-woven fabric as substrate, having a weight per unit area of 50 g/m² and a width of 110 cm, a wallpaper structure was applied with the paste in the rotary screen printing method at a rate of 40 m/min. This structure was dried at about 150°C for 35 sec. The structured wallpaper thus produced met all the demands made on it.

36





2092730

1

12

Claims

5

10

15

20

25

30

35

1. Method of producing three dimensionally surface-structured linings for wall and floor surfaces, in particular structured wallpaper, in which a structure paste is applied by means of a suitable application method in desired structure to a substrate web and then solidified on the substrate web, characterized in that the structure paste is used on the basis of a vinyl acetate-copolymer dispersion which contains inorganic and/or organic fillers and if necessary diluting agents.
2. Method according to claim 1, characterized in that a structure paste is used of which the total fillers contain a proportion of at least 10 % by weight ungelatinized starch as organic filler.
3. Method according to claim 1 or 2, characterized in that as diluting agent water is employed, with which the structure paste is adjusted to a suitable working viscosity.
4. Method according to at least one of claims 1 to 3, characterized in that the application of the structure paste to the substrate web is carried out by the rotary screen printing method, the flat screen printing method, the rotogravure method, the squeeze gravure method, the letterpress method, a coating method or a spraying method.
5. Method according to at least one of claims 1 to 4, characterized in that the structure paste is





2092730

- 1 13
- solidified on the substrate web by drying.
- 5 6. Method according to claim 5, characterized in that the drying takes place at temperatures of 40°C to 200°C.
- 10 7. Method according to at least one of claims 1 to 6, characterized in that the solidified structure paste is subjected to a further surface finishing, in particular an imprinting, painting and/or flocculation.
- 15 8. Structure paste for producing three-dimensionally surface-structured linings for wall and floor surfaces, in particular structured wallpapers, characterized by a mixture containing a polymer dispersion on the basis of a vinyl acetate copolymer, inorganic and/or organic fillers and if necessary solvents and/or diluents.
- 20 9. Structure paste according to claim 8, characterized in that the polymer dispersion is a plasticizer-free dispersion of a vinyl acetate-ethylene copolymer (EVA).
- 25 10. Structure paste according to claim 8 or 9, characterized in that it contains ungelatinized starch as organic filler.
- 30 11. Structure paste according to at least one of claims 8 to 10, characterized in that the inorganic fillers are substantially $Al(OH)_3$ and/or $CaCO_3$.
- 35





2092730

- 1 14
13. Structure paste according to at least one of claims 8
to 11, characterized in that the fillers include up to
5 10 % by weight TiO_2 .
13. Structure paste according to at least one of claims 8
to 12, characterized in that it contains 0.8 to 2.0
parts by weight of a 50-95 % polymer dispersion for 1
part by weight inorganic and/or organic fillers.
- 10 14. Structure paste according to at least one of claims 10
to 13, characterized in that the total filler contains
25-40 % by weight ungelatinized starch as organic
filler and as residual filler substantially $\text{Al}(\text{OH})_3$ as
15 inorganic filler.
15. Structure paste according to at least one of claims
8 to 14, characterized in that it contains as
processing retardation agent non-crystallizing sorbite
30 syrup or ethylene glycol.
16. Structure paste according to claim 15, characterized
in that it contains sorbite syrup in an amount of
1 to 8 % by weight with respect to the total paste.
- 25 17. Structure paste according to at least one of claims
8 to 16, characterized in that as expansion agent it
contains micropearls.
- 30 18. Structure paste according to claim 16, characterized
in that the amount of micropearls is 1 to 8 % by
weight with respect to the total paste.
- 35





2092730

- 1 15
19. Structure paste according to claim 9, containing substantially:
- 240-360 p.b.w. of a 50-55 % plasticizer-free EVA dispersion
- 5- 50 p.b.w. non-crystallizing sorbite syrup
- 10- 50 p.b.w. microparticles
- 300 p.b.w. $Al(OH)_3$ and ungelatinized starch
- 5- 30 p.b.w. water as viscosity adjusting agent.
20. Structure paste according to claim 19, characterized in that it contains 100 p.b.w. ungelatinized starch.
- 15 21. Structure paste according to claim 9, containing substantially:
- 240-360 p.b.w. of a 50-55 % plasticizer-free EVA dispersion
- 5- 30 p.b.w. ethylene glycol
- 20 6- 30 p.b.w. microparticles
- 230 p.b.w. $Al(OH)_3$ and/or $CaCO_3$
- 6- 30 p.b.w. hollow microbeads
- 25- 35 p.b.w. water as viscosity adjusting agent.
- 25 22. Structure according to claim 19, 20 or 21, characterized in that it contains 5-25 p.b.w. paraffin dispersion.
23. Structure paste according to claim 19, 20, 21 or 22, characterized in that it additionally contains 5-30 p.b.w. TiO_2 of the rutile type.
- 30
- 35





2092730

1

14

24. Structure paste according to claims 19, 20, 22 and 23,
containing substantially:

5

280 p.b.w. of a 50-55 % plasticizer free EVA
dispersion
200 p.b.w. $Al(OH)_3$ having a
grain size distribution of 20-25 μm
100 p.b.w. of an ungelatinized starch
20 p.b.w. TiO_2 of rutile type
37.5 p.b.w. microparticles having a grain diameter of
10-20 μm and an expansion ratio of
20
45 p.b.w. of a non-crystallizing sorbite syrup
20 p.b.w. paraffin dispersion and
10 p.b.w. water as viscosity adjusting agent.

10

15

25. Structure paste according to claims 19, 20 and 22,
containing substantially:

20

320 p.b.w. of a 50-55 % plasticizer free EVA
dispersion
200 p.b.w. $Al(OH)_3$ having a
grain size distribution of 20-25 μm
100 p.b.w. of an ungelatinized starch
15 p.b.w. microparticles having a grain diameter of
10-20 μm and an expansion ratio of 20
10 p.b.w. of a non-crystalline sorbite syrup
7.5 p.b.w. paraffin dispersion and
25 p.b.w. water as viscosity adjusting agent.

25

80

26. Structure paste according to claims 21 and 23,
containing substantially:

85





2092730

- 1 17
- 300 p.b.w. of a 50-55 % plasticizer-free EVA dispersion
- 30 p.b.w. water
- 5 10 p.b.w. ethylene glycol
- 7 p.b.w. micropearls having a grain diameter of 10-20 μm and an expansion ratio of 20
- 130 p.b.w. $\text{Al}(\text{OH})_3$ having a grain size distribution of 20-25 μm
- 10 100 p.b.w. CaCO_3 having a grain size distribution of 5-30 μm
- 7.5 p.b.w. TiO_2 of rutile type
- 12 p.b.w. hollow microbeads having a diameter of 10-80 μm .
- 15
27. Structure paste according to at least one of claims 8 to 26, characterized in that it additionally contains dyes, colour pigments, biocides and/or defoumers.
- 20 28. Use of a structure paste according to at least one of claims 8 to 27 for producing structured wallpapers.

Barragan & Oyar
PATENT AGENTS





2092730

Abstract

A method is described for producing structured wallpapers in which a PVC-free and plasticizer-free structure paste on the basis of inorganic and/or organic fillers and a polymer dispersion of a vinyl acetate copolymer is used. Non crystallizing sorbite syrup or ethylene glycol as processing retarding agents, paraffin dispersion as hydrophobing agent and micropearls and/or hollow microbeads for increasing the specific volume may also be added to the structure composition.





SUBSTITUTE

REMPLACEMENT

SECTION is not Present

Cette Section est Absente

